UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,430	04/12/2004	John A. Krawczak	EA-00282	2554

7590 07/24/2007

E. J. Brooks & Associates, PLLC
Suite 500
1221 Nicollet Avenue
Minneapolis, MN 55403

EXAMINER
STULTZ, JESSICA T

ART UNIT	PAPER NUMBER
2873	

MAIL DATE	DELIVERY MODE
07/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/822,430
Filing Date: April 12, 2004
Appellant(s): KRAWCZAK, JOHN A.

Jeffrey L. Cameron
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 9, 2007 appealing from the Office action mailed November 9, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,879,422	NOTARGIACOMO ET AL.	04-2005
6,438,148	HUI ET AL.	08-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 10-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Notargiacomo et al US 6,879,422, herein referred to as Notargiacomo et al '422, in view of Hui et al US 6,438,148, herein referred to as Hui et al '148.

Regarding claim 1, Notargiacomo et al '422 discloses a method of transmitting an optical beam, comprising: modulating an optical beam to encode information through use of an electro optic modulator that receives an electrical input signal (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by at least one electrical signal "s_1" through electro optic modulator "100", Figure 4); monitoring the encoded optical beam to measure a harmonic value (Column 11, lines 38-57, wherein the harmonic value of the optical beam is measured by optical emitter "903", Figure 4); and upon detection of the harmonic value, adjusting the electrical input signal provided to the modulator based upon the measured harmonic value (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical input is changed based on the desired harmonic value through feed back signal "s_r", Figure 4), but does not specifically disclose that the modulator is an electroabsorption modulator. Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode

information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam, for the purpose of providing a modulator to match the required speed of the operation.

Regarding claims 2-3, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method of transmitting an optical beam as shown above and Notargiacomo et al '422 further discloses sampling the encoded optical beam to measure the harmonic value using a photo receiver (Column 12, line 65-Column 13, line 15, wherein the optical receiver "12" is a photodiode that measures the harmonic value of the optical beam, Figure 4).

Regarding claim 4, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method of transmitting an optical beam as shown above and Notargiacomo et al '422 further discloses splitting the encoded optical beam to provide a sample signal and measuring the harmonic value of the sample signal (Column 12, line 65-Column 13, line 15, wherein the splitter is "230", Figure 4).

Regarding claim 5, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method of transmitting an optical beam as shown above and Notargiacomo et al '422 further discloses that the harmonic value is measured for a second order harmonic (Column 11, lines 38-

57, wherein the second order harmonic value of the optical beam is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4).

Regarding claim 6, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method of transmitting an optical beam as shown above and Notargiacomo et al '422 further discloses encoding a pilot signal onto the optical beam, monitoring the pilot signal; and adjusting the electrical input signal based upon the measured harmonic value detected in the pilot signal (Column 11, lines 38-57, wherein a pilot signal from control circuit "200" encodes the optical beam, wherein the harmonic is measured by optical emitter "903" and sent back to the modulator as a feedback signal to adjust the input electric signal "s_1" , Figure 4).

Regarding claim 7, Notargiacomo et al '422 discloses a method for transmitting information in an optical communications system, comprising: forming an output optical beam having a pilot signal component having a frequency that is outside a signal band range of an information signal component provided to have information encoded thereon (Column 11, lines 38-57 and Column 14, lines 18-58, wherein a pilot signal "s_f" provided from the oscillator "7" has a frequency lower than the lower limit of the frequency band of the modulating signal "s_2", wherein the harmonic of the pilot signal is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4); encoding information onto the information signal component of the output optical beam through use of an electro optic modulator (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by electrical signals "s_1" and "s_2" through electro optic modulator "100", Figure 4); monitoring the pilot signal component output from the modulator to determine the magnitude of a harmonic (Column 11, lines 38-57 and Column 14, lines 18-58, wherein the harmonic value of the pilot signal is measured by

optical emitter "903", Figure 4); correlating the magnitude of the harmonic with an optimum electrical signal value to be input to the modulator to reduce the magnitude of the harmonic; and adjusting an electrical input to the modulator to equal the optimum electrical signal value (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical input is changed based on the desired harmonic value through feed back signal "s_r", Figure 4), but does not specifically disclose that the modulator is an electroabsorption modulator. Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam, for the purpose of providing a modulator to match the required speed of the operation.

Regarding claim 8, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method for transmitting information as shown above and Notargiacomo et al '422 further discloses that the method includes measuring the pilot signal component to determine the magnitude of a harmonic produced by encoding a pilot signal with the EAM (Column 11, lines 38-57 and Column 14, lines 18-58, wherein the harmonic of the pilot signal "s_f" is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4)

Regarding claims 10-11, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method for transmitting information as shown above and Notargiacomo et al '422 further discloses sampling the harmonic using a photo receiver (Column 12, line 65-Column 13, line 15, wherein the optical receiver "12" is a photodiode that measures the harmonic value of the optical beam, Figure 4) and adjusting the electrical input to minimize the second order harmonic based upon the sampled harmonic (Column 11, lines 38-57, wherein the second order harmonic value of the optical beam is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4).

Regarding claim 12, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method for transmitting information as shown above and Notargiacomo et al '422 further discloses adjusting the electrical input within a set of voltages corresponding to a range of values around a minimum harmonic value (Column 11, lines 38-57, wherein the voltages are generated by control circuit "200" to operate around a minimum value of the second harmonic, Figure 4).

Regarding claim 13, Notargiacomo et al '422 discloses a control circuit for performing a method, comprising: modulating an optical beam to encode information through use of an electro optic modulator provided with an electrical input signal (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by at least one electrical signal "s_1" through electro optic modulator "100", Figure 4); monitoring the encoded optical beam to measure a harmonic value (Column 11, lines 38-57, wherein the harmonic value of the optical beam is measured by optical emitter "903", Figure 4); upon detection of the harmonic value, adjusting the electrical input signal provided to the modulator based upon the measured harmonic value (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical

input is changed based on the desired harmonic value through feed back signal "s_r", Figure 4), but does not specifically disclose that the modulator is an electroabsorption modulator. Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam, for the purpose of providing a modulator to match the required speed of the operation. Regarding that part of the claim stating "a computer readable medium having program instructions to cause a device to perform a method", that part of the claim has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding claims 14-15, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a control circuit for performing a method as shown above and Notargiacomo et al '422 further discloses tracking a correlation of the harmonic value and the voltage level of the electrical input

signal to determine a voltage input level that correlates to the lowest occurrence of the harmonic and applying an adjusted biased electrical input signal component to the input optical beam based upon the determined electrical input level that correlates to the lowest occurrence of the harmonic (Column 11, lines 38-57, wherein the voltages are generated by control circuit "200" to operate around a minimum value of the second harmonic, Figure 4).

Regarding claims 16-17, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a control circuit for performing a method as shown above and Notargiacomo et al '422 further discloses adjusting the electrical input signal component to minimize the harmonic and limit the harmonic to within 5% of a lowest occurrence of the harmonic (Column 11, lines 38-57, wherein the voltages are generated by control circuit "200" to operate around a minimum value of the second harmonic, Figure 4).

Regarding claim 18, Notargiacomo et al '422 discloses an optical transmission system, comprising: an electro optic modulator configured to encode information in an optical beam and to modulate the optical beam according to an electrical input signal (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_l" is encoded by at least one electrical signal "s_l" through electro optic modulator "100", Figure 4); and a monitoring component configured to measure a harmonic value in the encoded optical beam (Column 11, lines 38-57, wherein the harmonic value of the optical beam is measured by optical emitter "903", Figure 4); and to calculate an adjustment in the electrical input signal, to be applied to the modulator so as to reduce the measured harmonic (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical input is changed based on the desired harmonic value through feed back signal "s_r", Figure 4), but does not specifically disclose that the modulator is

an electroabsorption modulator. Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam, for the purpose of providing a modulator to match the required speed of the operation.

Regarding claim 19, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses that the monitoring component is configured to measure a harmonic value of a second order harmonic (Column 11, lines 38-57, wherein the second order harmonic value of the optical beam is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4).

Regarding claim 20, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses that the monitoring component is a signal processing card (Column 11, lines 38-57, wherein the signal of the of the optical beam is processed by optical emitter "903", which processes the signal and is therefore a signal processing card, Figure 4).

Regarding claim 21, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses a photo receiver positioned to receive an output optical beam from the modulator (Column 12, line 65-Column 13, line 15, wherein the optical receiver "12" is a photodiode that measures the harmonic value of the optical beam, Figure 4).

Regarding claim 22, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses an optical splitter to split the output optical beam and to direct a sample signal to the photo receiver (Column 12, line 65-Column 13, line 15, wherein the splitter is "230" which directs a sample signal to photodiode "12", Figure 4).

Regarding claims 23-24, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses that the sample signal is 1% of the output optical beam, wherein the photo receiver is positioned to receive the sample signal (Column 12, line 65-Column 13, line 15, wherein the splitter is "230" which directs a sample signal comprising 1% of the output optical beam to photodiode "12", Figure 4).

Regarding claims 25-26, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses an adjustment module to adjust the electrical input signal based upon ambient or device generated temperature changes (Column 2, line 5-20, wherein the applied voltage changes with temperature).

Regarding claims 27-28, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses an adjustment module to adjust the electrical input signal in greater or lesser amounts as the harmonic trends away or towards a lowest occurrence of the harmonic (Column 11, lines 38-57, wherein the voltages are generated by control circuit "200" to operate around a minimum value of the second harmonic, Figure 4).

Regarding claim 29, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses an optical source for providing the optical beam to the modulator (Column 11, lines 58-62, wherein the optical source is radiation source "240", Figure 4).

(10) Response to Argument

Appellant's argument against the 35 U.S.C. 103 (a) rejection of independent claims 1, 7, 13, and 18, is that the teaching reference Hui et al '148 does not teach adjusting the electrical input signal of an electroabsorption modulator, rather that Hui et al '148 teaches of adjusting the phase shift of one or more lasers, i.e. the "wrong component" of the system. However, the Hui et al '148 reference is used as a teaching to show that electroabsorption modulators are used in feedback-type optical systems wherein information is encoded onto an optical beam as shown above, irregardless of whether or not an electrical input signal of the electroabsorption modulator is adjusted by the feedback system. The examiner does not state that Hui et al '148 includes an electrical input into the modulator, rather that a feedback system is used to influence an input into the modulator, wherein the modulator encodes information onto an optical beam. Furthermore, since Notargiacomo et al '422 discloses a method of transmitting an optical beam,

comprising: modulating an optical beam to encode information through use of an electro optic modulator that receives an electrical input signal (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by at least one electrical signal "s_1" through electro optic modulator "100", Figure 4); monitoring the encoded optical beam to measure a harmonic value (Column 11, lines 38-57, wherein the harmonic value of the optical beam is measured by optical emitter "903", Figure 4); and upon detection of the harmonic value, adjusting the electrical input signal provided to the modulator based upon the measured harmonic value (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical input is changed based on the desired harmonic value through feed back signal "s_r", Figure 4), it is not necessary for the Hui et al '148 reference to also teach the step of adjusting the electrical input signal provided to the modulator based upon the measured harmonic value. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Appellant's second argument is that there is no motivation to combine the Notargiacomo et al '422 and Hui et al '148 references. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347,

21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine the references is that it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51) as shown in the above rejections.

Appellant's third argument is that the term "electro-absorptive" is misused in the Hui et al '148 patent. In response to applicant's argument that the term "electro-absorptive" is misused in the Hui et al '148 patent, the examiner cannot comment on the validity of a patent. See MPEP 1701 [R-3].

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jessica Stultz

June 27, 2007

Conferees:

Ricky Mack

Georgia Epps

RICKY MACK
SUPERVISORY PATENT EXAMINER

E. J. Brooks & Associates

1221 Nicollet Avenue Suite 500

Minneapolis MN 55403